

ence, but the time wasted in picking up the thread and resuming work.

By way of suggestion, the form used in print should be reproducible in handwriting or on the typewriter without confusion. The system of citations employed by *Chemical Abstracts* is probably the most carefully worked out of any in use, and is rapidly becoming recognized as a model. It employs bold-faced figures for volume numbers, which are preferable to either Roman numerals or ordinary figures. For example:

J. Am. Chem. Soc. 47, 1445-7 (1925).

In manuscripts for printing, bold-faced type is indicated by underlining with a wavy line. Since the typewriter has no such character, editors understand what is meant if volume numbers are underlined. If there is danger of confusing the volume and page numbers the same thing can be done in handwriting. Setting off the year in parentheses avoids any danger of confusing it with page numbers.

It is to be hoped that enough interest will be manifested in this present rather aggravating situation to result in a uniform international system.

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DEAN E. D. MERRILL'S recent appeal in *SCIENCE* for "simplified literature citations" merits consideration, and there will doubtless be general approval of the purpose he has in mind. However, there is something to be said, at least for abstract journals and other publications dealing mainly with current literature, in using in citations the periodical number in addition to the other data. Its inclusion takes some space and adds to the complexity of the title, but librarians and others seem to regard it as very valuable and helpful. It is a particular convenience in handling references in current or unbound periodicals, and while not indispensable, the thirty-five years' experience with *Experiment Station Record* indicates that it is well worth the space it occupies. Facility and accuracy in the handling of references are surely relevant considerations in making citations, and their promotion may be as desirable as an extreme of brevity.

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IS THE AUTOMOBILE EXTERMINATING THE WOODPECKER?

So frequently had I seen the dead bodies of the red-headed woodpecker along the highways that re-

cently when starting out on a drive of some 220 miles I decided to make a careful count of all the birds of this species both dead and alive that were to be seen along the road. Leaving Iowa City the second day of August I drove through a section of Iowa where the red-headed woodpeckers are probably more numerous than in any other part of their range. During the first part of this trip no dead woodpeckers were seen, while over 100 live birds were recorded. On the last 120 miles of the trip, however, twenty-one dead woodpeckers were observed as well as eighty-two that were alive.

Excepting in cases where the woodpeckers were too badly mangled, an examination of the crops and stomachs was made. As a result of this examination I found that without exception they contained such food as bread crumbs, sweet corn, bits of doughnuts and pieces of apple. The stomach contents would seem to indicate that these birds are in part attracted to the street by waste from the lunch baskets of passing tourists and by chance garbage that has been carelessly thrown into the street. This would suggest to those who would save the woodpecker the desirability of not throwing any lunch or other food along the right-of-way.

The red-head is a fearless bird. He will remain in the path of an approaching car until it is close upon him. Then the clumsiness of his feet that were intended for clinging to the side of a tree prevent him from making the quick get-a-way that saves the lives of many of the other species of birds that feed in similar manner. Moreover, the telephone and telegraph poles along the way, affording as they do excellent perching and nesting places, no doubt attract the woodpeckers to the highway.

I believe that the reason that no dead woodpeckers were found on the first one hundred miles of the trip, although one hundred live birds were seen, is due to the fact that much of this part of the road was a detour and so not extensively used by tourists. This would eliminate the waste from lunches, and so offer no inducement to the birds to go into the street.

Four weeks later on my return trip over the same road I found comparatively few woodpeckers, noting only twelve live birds and five dead ones. The scarcity of woodpeckers at this time may be accounted for by the fact that these birds, changing their diets as they do with the seasons, are much more likely to be found in the hardwood groves than in the open during the month of September.

One can not tell with any surety whether the dead birds seen on the highway were killed on one day or on three days. Neither can one say that because

he found twenty dead birds in traveling over a certain one hundred miles that he would find ten times that number if he traveled one thousand miles. The red-headed woodpecker is considered a common bird throughout its range, but its preference for certain localities within this range makes it exceedingly numerous in some places, while there may be miles and miles of country round about where it is scarcely ever seen.

Generally speaking, the red-headed woodpecker seems to be the only species of wild life that is killed in any great numbers by the automobile. Despite the mishaps to individuals, the species as a whole seems to be holding its own and is to-day, without doubt, one of the most numerous of our native birds.

In addition to the twenty-one dead woodpeckers I also noted the numbers of all other killed animals along the road, the following list being the result of my observation:

Chickens	30
Rabbits	3
Skunks	2
Striped spermophile	2
Cat bird	1
Sparrow hawk	1
Cow bird	1
Garter snake	1
Total	41

In addition to the preceding list I might add the dead insects that were taken from the back of my car radiator and the catch pan below, although they were accumulated in a much longer run than the 220 miles to which I have here referred. Fully one pint was removed, in which motley collection I was able to recognize twenty grasshoppers, seventeen cabbage butterflies, sixteen botflies, fourteen honey-bees and parts of many house flies, moths and beetles. These insects were the residue accumulation of about two thousand miles of travel; many more, of course, had disintegrated or fallen out along the way. One pint is, I believe, a fair estimate of the quantity of insects killed by a car of average size in traveling two thousand miles. Larger cars, traveling at a higher rate of speed, would kill many more, while smaller cars would run correspondingly under this amount.

Incidentally it may be of interest to estimate the size of a pile of insects that would be killed by all the cars of this country in driving two thousand miles. Allowing one pint to be a fair average for one car, the eighteen million cars now in use would make a killing which would be thirty feet square and as high as the Woolworth building.

Investigating the contents of my car radiator was

suggested to me by the Rev. W. E. Waldeland, who found a similar collection in his own automobile. I am further indebted to him for the following notes which he kindly made for my use.

We have just returned from a 2,000 mile auto trip through Iowa, Wisconsin and Minnesota. On this trip we saw less than a dozen red-headed woodpeckers killed by cars, and we saw but few other killed wild animals. The total of all species will not exceed fifty. Wild life seems to be more fortunate in this matter than the farmer's chickens.

My own observation has been that the latter are killed in larger numbers than the wild creatures, but that is a matter which is up to the farmer. He seems to think it less expensive to have a few fowls killed by cars than to fence them in. And then, too, he is able to eat the killed chickens if he sees them in time.

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DATE OF CHANNEL TRENCHING IN THE SOUTHWEST

THE article by Kirk Bryan on the "Date of Channel Trenching (Arroyo Cutting) in the Arid Southwest," in a recent issue of SCIENCE¹ was of considerable interest to me. The conditions mentioned as occurring in Gila Valley were of special interest since I came to that valley in February, 1900, and remained a resident for 23 years. As a large part of that period was spent in the Forest Service, I became an observer and student of erosion, grazing and the effect of the elements on the earth's surface.

The first herd of cattle was driven into the watershed of Gila River by Z. C. Prina in 1884, and located on Bonito Creek some 18 or 20 miles north of Solomonsville. Mr. Prina became a prominent citizen of Arizona, well known as a reliable and level-headed man of honor. I can testify to these qualities of my own knowledge. Mr. Prina described the country as consisting of fields of waving grass in 1884. The Gila River was a very small stream confined in a narrow shallow channel the banks of which were lined with willows, brush and sod grasses. The news of the presence of abundant feed and no cattle spread rapidly eastward and in the next two years thousands of head of cattle were brought in. Gila River remained within its banks until 1896, when, according to Mr. Prina, a flood topped the banks, 12 years after the introduction of cattle. Floods, thereafter, were an annual occurrence but as late as 1900, when I arrived in the valley, it required no effort to toss a stone across the river channel from bank to bank. During the drought,

¹ SCIENCE, vol. LXII, pp. 338-344, October 16, 1925.